the operation; later they became weaker and weaker; and in case of a limited lesion of the olivary body, the animal recovers nearly completely. These facts lead him to the conclusion that the olivary bodies constitute an organ which stands in near relation to the cerebellum and its functions, just as the semicircular canals and the gray matter of the third ventricle does. Looking at the olivary bodies as united on the one side with the posterior columns of the spinal cord, and on the other side with the cerebellum, he puts forth the hypothesis that they are an organ in which peripheral tactile sensations are reflected and conducted to the central organ of equilibrium, the cerebellum. With this view we have three organs of equilibrium in connection with the cerebellum: the semicircular canals, which are also connected with the organ of hearing; the gray substance of the third ventricle, which stands in relation to the organ of sight and the movements of the globe of the eye; and, finally, the olivary gray matter, which is probably connected with the organs of tactile sensibility.—*Pflüger's Archiv*, Band xxix, Heft. 5 and 6.

PHYSIOLOGICAL OPTICS.—M. W. Le Conte Stevens has made some experiments in physiological optics, using, partly, the light of the electric spark. They show that in the new mode of stereoscopy the play of the eyes is by no means necessary, although it constitutes an important aid in all cases where a clear visual judgment is not attainable at the first glance. They show, also, very conclusively, that the conscious perception of double images in the binocular field of view, on which so much stress is laid by Sir David Brewster, tends rather to interfere with it. His idea is to discard intuition entirely, and, with Helmholtz, to regard the degree of attention bestowed on objects pictured at the same moment on different parts of the two retinas as an element of more import than either play of eye or the perception of double images.—*London Philosophical Magazine*, October, 1882.

EFFECTS OF METALLIC EXCITATION UPON THE MOVEMENTS OF CILIATED EPITHELIUM.—Bœcci, after giving a short history of the experiments upon ciliated epithelium, describes an instrument, consisting of a table, corks, and a lever, which inscribes the movement communicated to it by the epithelium. For the excitation, he used thin polished discs of the metals. The œsophagi of frogs were used in the experiments. The metals were divided, according to their effects upon the movement of the cilia, into exciting, inhibitory, and indifferent. The indifferent metals were iron, tin, and lead; the exciting metals are copper, gold, and silver; whilst the inhibitory are zinc, cadmium, and bismuth.—*Rivista clinica di Bologna*, Sett. e Otto., 1882.

THE NUMBER OF NERVE-FIBRES AND MOTOR GANGLION CELLS IN THE SPINAL CORD OF THE FROG.—E. H. Birge has made some experiments upon this point with osmic acid and the microscope. His results are as follows: 1. The frog has as many ganglion cells in the anterior horns of gray matter as there are nerve-fibres running in the anterior roots. Every motor ganglion cell corresponds to a motor fibre. 2. In general, in the part of the spinal cord about the root there are found as many cells as the root has fibres; when in an individual case there is an irregularity in the division of the fibres in the roots, there is also an irregular division of the cells. Hence it is probable that the ganglion cell belonging to the corresponding nerve-fibres lies not far from the entrance of the corresponding fibre into the spinal cord. 3. The number of the ganglion cells, as well as the number of nerve-fibres, varies with the weight, that is to say, with the age of the frog. Where a certain minimal number is found in small frogs, there is a proportional increase of ganglion cells and nerve-fibres corresponding to the increase of weight. Hence new fibres and cells are formed during life, and a certain proportion exists between the weight of the muscles and the number of motor elements. 4. The number of sensory fibres in the same frog is somewhat greater than the motor. 5. The two roots have together the same number of fibres as the trunk immediately behind the spinal ganglion. There is no increase or decrease in the number of sensory fibres by its passage through the ganglion.—*DuBois' Archiv*, 1882. 5 and 6 Heft.

THE IRRITABILITY OF THE MOTOR GANGLION CELLS OF THE SPINAL CORD.—Dr. E. H. Birge has also made experiments upon this point. If in an irritable spinal cord of a frog there is a fine wire run through the cord from its anterior end backward, it is found that the posterior extremities fall into a strong tetanus, when the disturbing injury strikes in the neighborhood of the plexus ischiadicus. When the needle-point is driven through the nerves outside the spinal cord, no similar phenomenon appears; hence the tetanus is a peculiarity of the cells of the spinal cord from which the nerves arise. Under the direction of Prof. C. Ludwig he tried to determine the place of origin of the tetanus. It was accomplished by means of a steel needle and a magnifying glass. His results were as follow: 1. When the needle-thrust in a spinal cord not removed causes a tetanus, whose time of irritation lasts several seconds, then the muscles attacked are on the same half of the body in which the spinal cord has been perforated. If after a thrust in only one side of the spinal cord, both halves of the body pass into a state of tetanus, then a careful examination of the conditions of the experiment will show that teazing or pressure has extended simultaneously over both halves of the spinal cord. 2. Irritation along the length of the spinal cord in definite sections causes definite muscles to pass into tetanus, and these alone; thus, if the thrusts are limited to a piece extending from the end of the fourth ventricle to the origin of the third pair of nerves, then the muscles of the anterior extremities